D H E C
PROMOTE PROTECT PROSPER
Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

November 7, 2014

Mr. Brent Pace
BP Amoco Chemical Company - Cooper River Plant
1306 Amoco Drive
Wando, SC 29492

Re: Construction Permit No. 0420-0029-CU

Dear Mr. Pace:

Enclosed is Construction Permit No. 0420-0029-CU. This construction permit is being issued in accordance with the plans, specifications and other information submitted in the construction permit application, as amended.

In addition to this permit to construct, a permit to operate is required in accordance with *South Carolina Regulation 61-62, Air Pollution Control Regulations and Standards*. The regulations require a written request for a new or revised operating permit to cover any new or altered source, postmarked no later than fifteen (15) days after the actual date of initial startup of each new or altered source unless a more stringent time frame is required.

Please note the emissions limitations and operational requirements contained within this permit. It is important for you and/or an authorized representative responsible for the overall operation of this facility to read this issued permit carefully and to understand all requirements. If any errors or omissions are discovered, please notify James C. Robinson of my staff, via e-mail at robinsjc@dhec.sc.gov, or call (803) 898-0660 immediately.

Pursuant to the South Carolina Administrative Procedures Act, any Department decision involving the issuance, denial, renewal, suspension or revocation of a permit may be appealed by the applicant, permittee, licensee, and/or affected persons. Please see the enclosed "Guide to Board Review" for guidelines on filing an appeal.

Sincerely,

Elizabeth J. Basil
Director, Engineering Services Division, Bureau of Air Quality

EJB:jcr:kea

Enclosure

cc: Permit File: 0420-0029

ec: Wendy Boswell, BEHS
Michael Doerner, TRC Environmental Corporation
Michael Shroup, Source Evaluation
Heinz Kaiser, Air Toxics

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

Office of Environmental Quality Control
Bureau of Air Quality
PSD Construction Permit

BP Amoco Chemical Company-Cooper River Plant
1306 Amoco Drive
Wando, SC 29492
Berkeley County

Pursuant to the provisions of the *Pollution Control Act*, Sections 48-1-50(5) and 48-1-110(a), the 1976 *Code of Laws of South Carolina*, as amended, and *South Carolina Regulation 61-62, Air Pollution Control Regulations and Standards*, the Bureau of Air Quality authorizes the construction of this facility and the equipment specified herein in accordance with the plans, specifications, and other information submitted in the construction permit application received on April 11, 2013, as amended. All official correspondence, plans, permit applications, and written statements are an integral part of the permit. Any false information or misrepresentation in the application for a construction permit may be grounds for permit revocation.

The construction and subsequent operation of this facility is subject to and conditioned upon the terms, limitations, standards, and schedules contained herein or as specified by this permit and its accompanying attachments.

Permit Number: **0420-0029-CU**
Issue Date: **November 7, 2014**

Director, Engineering Services Division
Bureau of Air Quality

A. PROJECT DESCRIPTION

Permission is hereby granted to modify the #1 and #2 Oxidation (OX) Units to remove limitations that prevent the units from operating at their design capacities (debottlenecking); and to make minor modifications to the #1 and #2 Purified Terephthalic Acid (PTA) Units to reduce operating costs. In general, these modifications will include improvements to the reaction environment, additional reaction air capacity, optimization of the recovery systems, improved Dehydration Tower (DHT) operation, improved energy recovery, removal of several emission points, addition of dense phase conveying and additional cooling tower capacity. These changes will result in increased actual hourly production and emissions rates, but will not increase maximum production rates or potential emission rates. This project is referred to as the OX Modernization/Debottleneck project.

The specific equipment revisions, additions, and removals included in the proposed project are as follows:

1. #1 OX unit
   - Replacement of the four existing reactors (BR-301 A-D) with a new single more efficient reactor (BR-301)
   - Replacement of the reactor overhead condenser system
   - Replacement of the air compressor rotor to reduce energy consumption
   - Direct injection of Paraxylene (PX) to the new reactor
   - Additional reactor overhead recovery capacity by replacing equipment with an improved design
   - Routing of 1st crystallizer (BD-401) vent to reactor off-gas recovery system
   - Maintain power recovery in off-gas expander by lowering upstream pressure drop
   - Conversion of dehydration tower (DHT) to azeotropic distillation unit
   - Change DHT overhead recovery system to a two-stage system by:
     - Converting existing DHT Scrubber (BT-702) to a one-stage acid scrubber
     - Routing the DHT Scrubber vent to the Low Pressure Absorber (LPA) (BT-603)
     - Revising the packing in the LPA
   - Change High Pressure Absorber (T-401) internal packing
   - Addition of dense phase conveying (conveyance of solids with less carrier gas)
   - Additional capacity for filters
   - Removal of the low pressure vent gas treatment (LPVGT) compressor (BC-710)
   - Removal of the solvent stripper (BT-605)
   - Removal of the residue evaporator (BM-606) and catalyst recovery unit (BD-625/631/632/BE-645)
   - Removal of the PX Stripper (BT-740)
   - Addition of a steam turbine to generate power from excess low pressure steam
   - Addition of a fixed roof NBA storage tank,
   - New replacement of existing Emergency Generator (BM-1201)
   - Addition of a new Emergency Generator (BM-1204)

2. #1 PTA unit
   - Revisions to crystallizer vent scrubber (CM-301) to improve energy recovery
   - Addition of a 5th crystallizer (CD-300)
   - Addition of dense phase conveying
   - Replacement of dryer (CM-403B)

3. #2 OX unit
   - Direct injection of PX to reactor
   - Re-rating (Modification) of air compressor for additional capacity
   - Replacement of reactor overhead condenser
   - Conversion of dehydration tower (DHT) (DT-403) to an azeotropic distillation unit
   - Modification of packing or trays in DHT (DT-403), High Pressure Absorber (HPA) (DT-111), LPA (DT-302), Dryer Scrubber (DT-301) and High Pressure Vent Gas Treatment System (HPVGTS) Scrubber (DT-1821)
   - Routing of DHT (DT-403) vent to LPA system (DT-302)
   - Addition of dense phase conveying

- Removal of Low Pressure Vent Gas Treatment (LPVGT) System compressor (DC-304)
- Removal of solvent stripper (DT-402) system
- Removal of the residue evaporator (DM-403) and catalyst recovery unit (DD-412/413/414/DE-416)
- Removal of PX Stripper (DT-404)
- Addition of a steam turbine to generate power from excess steam
- Addition of a fixed roof NBA storage tank,

4. #2 PTA Unit
   - Modifications to crystallizer vent scrubber (DM-601) to improve energy recovery
   - Modification of piping system from PTA Feed Drum (DD-500) to the Sundyne pumps
   - Addition of a 4th Sundyne pump
   - Addition of dense phase conveying
   - Replacement of dryer (DM-703)

5. Cooling Towers
   - Additional #1 Cooling Tower capacity
   - Additional #2 Cooling Tower capacity

The project will also include smaller items that will occur on all the units in the following general categories:

1. Additional and/or improved automation, multivariable control schemes, and on-line analyzers to increase unit reliability and improve process control.
2. Replacement of process equipment and piping that are negatively impacting maintenance costs and unit reliability.
3. Replacement of obsolete or end-of-life equipment such as piping, instruments, and computer equipment, where replacement parts are no longer available and equipment that has been determined to be too worn or corroded.
4. Replacement of exchangers and vessels to improve metallurgy, reduce corrosion, and reduce maintenance costs.

As part of this project, BP Amoco – Cooper River Plant (BPCR) is removing synthetic minor PSD avoidance limits that were established in construction permits 0560-0029-CF, -CJ, -CP, and -CR for the following emission points: #1 OX DHT Scrubber, #1 and #2 OX LPA's, #1 and #2 OX HPVGTS, #2 PTA Crystallizer Vent Scrubber, #2 OX HPVGTS Heater, and the combined limit for CR#1 and CR#2 Plants. The table below lists the individual synthetic minor limits that will be removed. These emission points have been included in the BACT analysis.

Synthetic Minor Limits To Be Removed						
OP ID	**CP ID(s)**	**Process/Equipment (Equipment ID)**	**Pollutant**	**Emission Limitation (lb/hr)**	**Emission Limitation (TPY)**	**Proposed BACT Limit (lb/hr)**
03	CP & CR	#1 OX LPA (BT-603)	VOC	40	80	9.6
03	CR	#1 OX LPA (BT-603)	CO	N/A	40	4.1
03	CP & CR	#1 OX DHT Scrubber (BT-702)	VOC	60	165	N/A[(1)]
03	CR	#1 OX DHT Scrubber (BT-702)	CO	N/A	380	
03	CJ & CR	#1 OX HPVGTS (HPA (BT-401))	VOC	85	80	4.7
03	CJ & CR	#1 OX HPVGTS (HPA (BT-401))	CO	1452	375	87.9
05	CF[(2)]	#2 OX LPA (DT-302)	VOC	15.57	N/A	8.85
		#2 OX HPVGTS (HPA (DT-111))				3.5
05	CF[(2)]	#2 PTA Unit Crystallizer Vent Scrubber (DM-601)	VOC	25.6	N/A	20.0

05	CF[(2)]	#2 OX Fugitives	VOC	3.5	N/A	HON LDAR
05	CF[(2)]	#2 OX HPVGTS Fired Heater	VOC	0.84	N/A	0.0055 lb/MM BTU
03-06	CP	Combined total for CR#1 & CR#2	VOC	N/A	1825	Replaced with individual vent limits

(1) The #1 OX DHT Scrubber will no longer vent to the atmosphere and is being routed to the #1 OX LPA. The #1 OX LPA BACT limit accounts for the #1 OX DHT Scrubber emissions.

(2) Construction Permit 0420-0029-CF established a total PSD avoidance limit of 49.26 lb VOC/hr for the Cooper River #2 Plant. This limit consisted of these four sources of emissions, and the following sources of emissions: Incremental increase from the Tank Farm (0.02 lb/hr) and Wastewater Fugitives (3.11 lb/hr), the Anaerobic Reactor (0.31 lb/hr), and the CO_2 Stripper (0.35 lb/hr). A revised PSD avoidance SM limit established through construction permit 0420-0029 will be the sum of the emissions from the Tank Farm, Wastewater Fugitives, Anaerobic Reactor, and CO_2 Stripper (3.79 lb/hr).

B.1 EQUIPMENT FOR #1 OXIDATION UNIT (TV PERMIT UNIT ID 03)

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
BR-301	Reactor with Overhead Condensers*	#1 HPVGTS	O-2/10/15
BD-200	PX Feed Drum*	N/A	N/A
BC-906	60# Steam Generator*	N/A	N/A
BT-700	Liquid-Liquid Extraction Tower*	N/A	N/A
BF-1405	NBA Storage Tank* (Specific Tank Size TBD)	N/A	N/A
BT-750	Entrainer Recovery Tower* (ERT)	N/A	O-3
BM-1201	400 kW Emergency Generator*	N/A	O-17
BM-1204	500 kW Emergency Generator*	N/A	O-24
BT-701	Dehydration Tower (DHT)	N/A	O-3
BD-401	1st Crystallizer	N/A	N/A
BT-603	Low Pressure Absorber (LPA)	N/A	O-3
BC-104	Power Recovery Expander	N/A	O-2/10/15
BT-400	PX Scrubber	N/A	N/A
BT-401	High Pressure Absorber (HPA)	#1 HPVGTS	O-2/10/15
BD-604	Azeo Storage Drum	N/A	N/A
BD-204	Feed Mix Drum	N/A	N/A
BD-503	Filter Vacuum Sep. Drum	N/A	N/A
BM-1101A/B	Off-Gas Dryer	N/A	O-2/10/15
BM-1101C/D	Off-Gas Dryer	N/A	O-2/10/15

* These equipment are new. All other equipment listed is being modified.

B.2 EQUIPMENT FOR #1 PURIFIED TEREPHTHALIC ACID UNIT (TV PERMIT UNIT ID 04)

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
CD-300	Crystallizer	CM-301	P-2
CM-403B	Dryer	N/A	P-3B

B.3 EQUIPMENT FOR #2 OXIDATION UNIT (TV PERMIT UNIT ID 05)

Equipment ID	Equipment Description	Control Device ID	Emission Point ID
DT-400	Liquid-Liquid Extraction Tower*	N/A	N/A
DF-460	NBA Storage Tank* (Specific Tank Size TBD)	N/A	N/A
DT-450	Entrainer Recovery Tower* (ERT)	N/A	O2-1
DC-906	60# Steam Generator*	N/A	N/A
DT-403	Dehydration Tower (DHT)	N/A	O2-1
DT-302	Low Pressure Absorber (LPA)	N/A	O2-1
DC-104	Power Recovery Expander	N/A	O2-3/4
DD-402	Azeo Storage Drum	N/A	N/A

* These equipment are new. All other equipment listed is being modified.

C. CONTROL DEVICES

Control Device ID	Control Device Description	Pollutant(s) Controlled
#1 HPVGTS	#1 Oxidation Unit High Pressure Vent Gas Treatment System (Catalytic Oxidizer (CTO) (BR-1814) followed by a Scrubber)	VOC, HAP, CO
#2 HPVGTS	#2 Oxidation Unit High Pressure Vent Gas Treatment System (CTO (DR-1814) followed by a Scrubber)	VOC, HAP, CO
CM-301	Venturi Scrubber; called #1 Crystallizer Vent Scrubber (CVS)	$PM/PM_{10}/PM_{2.5}$
DM-601	Venturi Scrubber; called #2 Crystallizer Vent Scrubber (CVS)	$PM/PM_{10}/PM_{2.5}$

D. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
D.1	**Equipment/Control Device ID:** All (S.C. Regulation 61-62.1, Section II.J.1.g) A copy of the Department issued construction and/or operating permit must be kept readily available at the facility at all times. The owner or operator shall maintain such operational records; make reports; install, use, and maintain monitoring equipment or methods; sample and analyze emissions or discharges in accordance with prescribed methods at locations, intervals, and procedures as the Department shall prescribe; and provide such other information as the Department reasonably may require. All records required to demonstrate compliance with the limits established under this permit shall be maintained on site for a period of at least 5 years from the date the record was generated and shall be made available to a Department representative upon request.

D. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
D.2	**Equipment/Control Device ID:** All The owner/operator shall maintain on file all measurements including continuous monitoring system or monitoring device performance measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required in a permanent form suitable for inspection by Department personnel.
D.3	**Equipment/Control Device ID:** All All gauges shall be readily accessible and easily read by operating personnel and Department personnel (i.e. on ground level or easily accessible roof level). Monitoring parameter readings (i.e., pressure drop readings, etc.) and inspection checks shall be maintained in logs (written or electronic), along with any corrective action taken when deviations occur. Each incidence of operation outside the operational ranges, including date and time, cause, and corrective action taken, shall be recorded and kept on site. Exceedance of operational range shall not be considered a violation of an emission limit of this permit, unless the exceedance is also accompanied by other information demonstrating that a violation of an emission limit has taken place. Reports of these incidences shall be submitted semiannually. If no incidences occurred during the reporting period then a letter shall indicate such. Any alternative method for monitoring control device performance must be preapproved by the Department and shall be incorporated into the permit as set forth in S.C. Regulation 61-62.70.7.
D.4	**Equipment/Control Device ID:** BR-1814 (#1 CTO), DR-1814 (#2 CTO), BT-603 (#1 LPA), DT-302 (#2 LPA), CM-301 (#1 CVS), DM-601 (#2 CVS) For any source test required under an applicable standard or permit condition, the owner, operator, or representative shall comply with S.C. Regulation 61-62.1, Section IV - Source Tests. The owner, operator, or representative shall ensure that source tests are conducted while the source is operating at the maximum expected production rate or other production rate or operating parameter which would result in the highest emissions for the pollutants being tested. Some sources may have to spike fuels or raw materials to avoid being subjected to a more restrictive feed or process rate. Any source test performed at a production rate less than the rated capacity may result in permit limits on emission rates, including limits on production if necessary. The owner/operator shall comply with any limits that result from conducting a source test at less than rated capacity. A copy of the most recent Department issued source test summary letter, whether it imposes a limit or not, shall be maintained with the construction permit, for each source that is required to conduct a source test. Site-specific test plans and amendments, notifications, and source test reports shall be submitted to the Manager of the Source Evaluation Section, Bureau of Air Quality.

D. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

<table>
<tr><th>Condition Number</th><th>Conditions</th></tr>
<tr><td>D.5</td><td>Equipment/Control Device ID: BR-1814 (#1 CTO), DR-1814 (#2 CTO)

(S.C. Regulation 61-62.5, Standard No. 3, Section IX) This equipment shall be limited to the maximum allowable emissions of PM of 0.5lb/10^6 Btu and an opacity of 20%, each.

The owner/operator shall perform a visual inspection on a weekly basis. Visual inspection means a qualitative observation of opacity during daylight hours where the inspector records results in a log, noting color, duration, density (heavy or light), cause and correction action taken for any abnormal emissions. The observer does not need to be certified to conduct valid visual inspections. However, at a minimum, the observer should be trained and knowledgeable about the effects on visibility of emissions caused by background contrast, ambient lighting, and observer position relative to lighting, wind, and the presence of uncombined water. Logs shall be kept to record all visual inspections, including cause and corrective action taken for any abnormal emissions and visual inspections from date of recording. The owner/operator shall submit semiannual reports. The report shall include records of abnormal emissions, if any, and corrective actions taken.</td></tr>
<tr><td>D.6</td><td>Equipment/Control Device ID: All

(S.C. Regulation 61-62.5, Standard No. 4, Section VIII) Particulate matter emissions shall be limited to the rate specified by use of the following equations:
For process weight rates less than or equal to 30 tons per hour
$E = (F)\ 4.10P^{0.67}$ and
For process weight rates greater than 30 tons per hour
$E = (F)\ 55.0P^{0.11} - 40$
Where E = the allowable emission rate in pounds per hour
P = process weight rate in tons per hour
F = effect factor from Table B in S.C. Regulation 61-62.5, Standard No. 4

For the purposes of compliance with this condition, the process boundaries are defined as follows:

<table>
<tr><th>Unit IDs</th><th>Process Weight Rate (ton/hr)</th></tr>
<tr><td>03-04, combined</td><td>158.93</td></tr>
<tr><td>05-06, combined</td><td>126.57</td></tr>
</table>

The owner/operator shall continue to operate and maintain pressure drop gauge(s) on each module of the baghouse. Pressure drop readings shall be recorded daily during source operation. Operation and maintenance checks shall be made on at least a weekly basis for baghouse cleaning systems, dust collection hoppers, and conveying systems for proper operation. The baghouse shall be in place and operational whenever processes controlled by it are running, except during periods of baghouse malfunction or mechanical failure.

Operational ranges for the monitored parameters shall be reviewed and re-established (if appropriate) to ensure proper operation of the pollution control equipment. These operational ranges for the monitored parameters shall be derived from stack test data, vendor certification, and/or operational history and visual inspections, which demonstrate the proper operation of the equipment. If ranges need to be re-established, these ranges and supporting documentation (certification from manufacturer, stack test results, 30 days of normal readings, opacity readings, etc.) shall be submitted to the Director of Engineering Services within 180 days of startup.</td></tr>
</table>

D. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
D.7	**Equipment/Control Device ID:** Unit ID 03 (#1 OX Unit), Unit ID 04 (#1 PTA Unit), Unit ID 05 (#2 OX Unit). Unit ID 06 (#1 PTA Unit) (S.C. Regulation 61-62.5, Standard No. 4, Section IX) Where construction or modification began after December 31, 1985, emissions from these source(s) (including fugitive emissions) shall not exhibit an opacity greater than 20%, each. The owner/operator shall perform a visual inspection on a weekly basis. Visual inspection means a qualitative observation of opacity during daylight hours where the inspector records results in a log, noting color, duration, density (heavy or light), cause and correction action taken for any abnormal emissions. The observer does not need to be certified to conduct valid visual inspections. However, at a minimum, the observer should be trained and knowledgeable about the effects on visibility of emissions caused by background contrast, ambient lighting, and observer position relative to lighting, wind, and the presence of uncombined water. Logs shall be kept to record all visual inspections, including cause and corrective action taken for any abnormal emissions and visual inspections from date of recording. The owner/operator shall submit semiannual reports. The report shall include records of abnormal emissions, if any, and corrective actions taken.
D.8	**Equipment/Control Device ID:** BR-1814 (#1 CTO), DR-1814 (#2 CTO) **Limits/Standards:** In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, BR-1814 shall be limited to 4.70 lb/hr and DR-1814 shall be limited to 3.50 lb/hr of VOC emissions, each, based on a 3-hour block average. . In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, BR-1814 shall be limited to 87.9 lb/hr and DR-1814 shall be limited to 75.0 lb/hr of CO emissions, each, based on a 30-day rolling average. **Testing:** An initial source test for VOC and CO emissions, for each CTO, shall be conducted within 180 days after startup, and every three years thereafter. If the catalyst is replaced in a CTO, a new source test schedule shall be required as follows: A source test for VOC and CO emissions shall be conducted within 90 days after changing the catalyst in a CTO, and every three years thereafter. The source test shall be used to show compliance with the Standard No. 7 BACT limits, verify emissions, and verify monitoring parameters. The owner or operator shall operate the source(s) within the parameter(s) established during the most recent satisfactory source tests. A copy of the most recent Department issued source test summary letter(s) that established the parameter(s) shall be maintained with the construction permit. **Monitoring/Record Keeping/Reporting/Other:** The owner or operator shall monitor the inlet and outlet temperature of each CTO, while processes venting to the CTO are in operation. These parameters shall be monitored continuously with a daily average, which means that at least one data point shall be measured every 15-minute period, within a 24-hour block period (midnight to midnight), and shall be averaged together for a daily reading. The parameters used to demonstrate compliance shall be the daily average inlet temperature and the daily average delta temperature of the CTO. . Records of hourly block averages of monitored parameters shall be maintained on site for a period of at least 5 years. Records of excursions of monitored parameters shall be submitted semi-annually. If no excursions occurred during the reporting period then a letter shall be submitted to the Department indicating such. An excursion shall be deemed to have occurred if either of the following are met: ▪ The daily average for a parameter is outside the approved monitoring range. ▪ The number of valid 15-minute monitoring periods for a given parameter is less than 75 percent of the number of process operating periods in a 24-hour day.
D.9	**Equipment/Control Device ID:** BT-603 (#1 LPA), DT-302 (#2 LPA) **Limits/Standards:** In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, BT-603 shall be limited to 9.60 lb/hr and DT-302 shall be limited to 8.85 lb/hr of VOC emissions, each, based on

D. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
	a 3-hour block average. In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, BT-603 shall be limited to 4.10 lb/hr and DT-302 shall be limited to 3.50 lb/hr of CO emissions, each, based on a 30-day rolling average. **Testing:** An initial source test for VOC and CO emissions, for each LPA, shall be conducted within 180 days after startup, and every three years thereafter. The source test shall be used to show compliance with the Standard No. 7 BACT limits, verify emissions, and verify monitoring parameters. The owner or operator shall operate the source(s) within the parameter(s) established during the most recent satisfactory source tests. A copy of the most recent Department issued source test summary letter(s) that established the parameter(s) shall be maintained with the construction permit. **Monitoring/Record Keeping/Reporting/Other:** The owner or operator shall monitor the top liquid flow rate and top temperature of each LPA, while processes venting to the LPA are in operation. These parameters shall be monitored continuously with a daily average, which means that at least one data point shall be measured every 15-minute period, within a 24-hour block period (midnight to midnight), and shall be averaged together for a daily reading. Records of hourly block averages of monitored parameters shall be maintained on site for a period of at least 5 years. Records of excursions of monitored parameters shall be submitted semi-annually. If no excursions occurred during the reporting period then a letter shall be submitted to the Department indicating such. An excursion shall be deemed to have occurred if either of the following are met: ▪ The daily average for a parameter is outside the approved monitoring range. ▪ The number of valid 15-minute monitoring periods for a given parameter is less than 75 percent of the number of process operating periods in a 24-hour day. The owner or operator shall calculate and maintain hourly CO emissions. Hourly CO emissions shall be calculated on a 30-day rolling average. Reports of the calculated values shall be submitted semiannually. An algorithm, including example calculations and emission factors, explaining the method used to determine emission rates shall only be included in the initial report. Subsequent submittals of the algorithm are required within 30 days of the change if the algorithm or basis for emissions is modified or the Department requests additional information.
D.10	**Equipment/Control Device ID:** CM-301 (#1 CVS), DM-601 (#2 CVS) **Limits/Standards:** In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, CM-301 and DM-601 are limited to 20.0 lb/hr VOC emissions, each, based on a 3-hour block average. In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, CM-301 shall be limited to 24.0 lb/hr and DM-601 shall be limited to 20.0 lb/hr of CO emissions, based on a 30-day rolling average. **Testing:** An initial source test for VOC and CO emissions, for each CVS, shall be conducted within 180 days after startup, and every three years thereafter. The source test shall be used to show compliance with the Standard No. 7 BACT limits and verify emissions. **Monitoring/Record Keeping/Reporting/Other:** The owner or operator shall calculate and maintain hourly VOC and CO emissions. Hourly VOC emissions shall be calculated on a 3-hour block average, and hourly CO emissions shall be calculated on a 30-day rolling average. Reports of the calculated values shall be submitted semiannually. An algorithm, including example calculations and emission factors, explaining the method used to determine emission rates shall only be included in the initial report. Subsequent submittals of the algorithm are required within 30 days of the change

D. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
	if the algorithm or basis for emissions is modified or the Department requests additional information.
D.11	**Equipment/Control Device ID:** Unit ID 03 (#1 OX Unit), Unit ID 05 (#2 OX Unit) **Limits/Standards:** In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, all fugitive VOC emissions from the #1 and #2 Oxidation Units shall be required to comply with the HON LDAR program (40 CFR 63 Subpart H). **Testing:** Testing shall be performed as per 40 CFR 63.180. **Monitoring/Record Keeping/Reporting/Other:** Monitoring, recordkeeping, and reporting shall be performed in accordance with 40 CFR 63.160 through 60.182. All VOCs from these processes shall be treated as Hazardous Air Pollutants (HAPs) for determining compliance.
D.12	**Equipment/Control Device ID:** DB-1813 (#2 OX HPVGTS Fired Heater) **Limits/Standards:** In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, the #2 OX HPVGTS Fired Heater shall be limited to 0.0055 lb/MM BTU for VOCs and 0.084 lb/MM BTU for CO, each based on a 3-hour block average. **Testing:** None required. **Monitoring/Record Keeping/Reporting/Other:** This source is permitted to burn only natural gas as fuel. The use of any other substances as fuel is prohibited without prior written approval from the Department. Natural gas fuel usage shall be monitored and recorded on a monthly basis. Records of natural gas usage shall be submitted semiannually. The owner or operator shall develop a tune-up plan and perform tune-ups on this source, once every 13 months from the date of startup. The tune-up plan shall be developed in accordance with manufacturer's specifications or with good engineering practices. Records of tune-ups shall be submitted semiannually. The tune-up plan shall only be included in the initial report. Subsequent submittals of the tune-up plan are required within 30 days of the change if the plan is modified or the Department requests additional information. The owner or operator shall implement good combustion practice(s) on this source. Good combustion practice is defined as maintaining proper air/fuel mixture in the combustion zone by holding excess oxygen between 3.5 and 12%. Percent excess oxygen shall be monitored continuously with a daily average, which means that at least one data point shall be measured every 15-minute period, within a 24-hour block period (midnight to midnight), and shall be averaged together for a daily reading. Records of hourly block averages of monitored parameters shall be maintained on site for a period of at least 5 years. Records of excursions of monitored parameters shall be submitted semi-annually. If no excursions occurred during the reporting period then a letter shall be submitted to the Department indicating such. An excursion shall be deemed to have occurred if either of the following are met: ▪ The daily average for a parameter is outside the approved monitoring range. ▪ The number of valid 15-minute monitoring periods for a given parameter is less than 75 percent of the number of process operating periods in a 24-hour day.

D. LIMITATIONS, MONITORING AND REPORTING CONDITIONS

Condition Number	Conditions
D.13	**Equipment/Control Device ID:** BM-1201, BM-1204 **Limits/Standards:** In accordance with Standard No. 7 – Prevention of Significant Deterioration and based on BACT analysis, these sources shall meet Tier 3 emission standards of 40 CFR 60 Subpart IIII, shall be limited to operating no more than 100 hours per year on a non-emergency basis, and shall burn only ultra low sulfur diesel as fuel. **Testing:** None required. **Monitoring/Record Keeping/Reporting/Other:** The owner or operator shall record the actual operating hours of each generator on a monthly basis. Reports of the recorded hours of operation shall be submitted semiannually. These sources are permitted to burn only ultra low diesel as fuel. The use of any other substances as fuel is prohibited without prior written approval from the Department. Fuel oil sulfur content shall be less than or equal to 0.0015 percent by weight. Fuel oil supplier certification shall be obtained for each batch of oil received and stored on site. Reports of the recorded sulfur content shall be submitted semiannually.
D.14	**Equipment/Control Device ID:** Unit ID 03 (#1 OX Unit), Unit ID 05 (#2 OX Unit) (40 CFR 60, Subparts A and VVa) These units are subject to the requirements of 40 CFR 60, Subpart VVa. However, since these units are subject to the HON LDAR program under 40 CFR 63 Subpart H, they are required to comply only with the provisions of 40 CFR 63 Subpart H, per §63.160(b)(1).
D.15	**Equipment/Control Device ID:** BR-301 (#1 OX Reactor), DR-106 A/B (#2 OX Reactors) (40 CFR 60, Subparts A and III) These sources are subject to the requirements of 40 CFR 60, Subpart III. However, since these sources are or will be Group 2 HON process vents, they are required to comply only with the provisions of 40 CFR 63 Subpart G, per §63.110(d)(2)(ii).
D.16	**Equipment/Control Device ID:** BT-701 (#1 DHT), DT-403 (#2 DHT), BT-750 (#1 ERT), DT-450 (#2 ERT) (40 CFR 60, Subparts A and NNN) These sources are subject to the requirements of 40 CFR 60, Subpart NNN. However, since these sources will be Group 2 HON process vents, they are required to comply only with the provisions of 40 CFR 63 Subpart G, per §63.110(d)(5)(ii).
D.17	Prior to start up of equipment as allowed under this PSD construction permit, the facility shall continue to comply with the current established synthetic minor limitations as listed in the project description section. The facility shall notify the Department 15 days after completion of a project that would result in a synthetic minor limit no longer being applicable.

E. RESERVED

F. MODELING REQUIREMENTS

Condition Number	Condition
F.1	Air dispersion modeling (or other method) has demonstrated that this facility's operation will not interfere with the attainment and maintenance of any state or federal ambient air standard. Any changes in the parameters used in the air dispersion modeling may require a review by the facility to determine continuing compliance with these standards. These potential changes include any decrease in stack height, decrease in stack velocity, increase in stack diameter, decrease in stack exit temperature, increase in building height or building additions, increase in emission rates, decrease in distance between stack and property line, changes in vertical stack orientation, and installation of a rain cap that impedes vertical flow. Parameters that are not required in the determination will not invalidate the demonstration if they are modified. The emission rates used in the determination are listed in Attachment - Modeled Emission Rates of this permit. Higher emission rates may be administratively incorporated into Attachment - Modeled Emission Rates of this permit provided a demonstration using these higher emission rates shows the attainment and maintenance of any state or federal ambient air quality standard or with any other applicable requirement. Variations from the input parameters in the demonstration shall not constitute a violation unless the maximum allowable ambient concentrations identified in the standard are exceeded. The owner/operator shall maintain this facility at or below the emission rates as listed in Attachment - Modeled Emission Rates, not to exceed the pollutant limitations of this construction permit. Should the facility wish to increase the emission rates listed in Attachment - Modeled Emission Rates, not to exceed the pollutant limitations in the body of this permit, it may do so by the administrative process specified above. This is a State Only enforceable requirement.

G. NESHAP PERIODIC REPORTING SCHEDULE SUMMARY

NESHAP Part	NESHAP Subpart	Compliance Monitoring Report Submittal Frequency	Reporting Period	Report Due Date
63	F & G	Semi-Annual (Periodic Report)	January 1 – June 30 July 1 – December 31	No later than 60 calendar days after the end of each 6-month period
63	H	Semi-Annual	January 1 – June 30 July 1 – December 31	No later than 60 days after the end of each reporting per
63	ZZZZ (Emergency Generators)	N/A	N/A	N/A

1. This table summarizes only the periodic compliance reporting schedule. Additional reports may be required. See specific NESHAP Subpart for additional reporting requirements and associated schedule.
2. This reporting schedule does not supersede any other reporting requirements including but not limited to 40 CFR Part 60, 40 CFR Part 61, 40 CFR Part 63, and/or Title V. The MACT reporting schedule may be adjusted to coincide with the Title V reporting schedule with prior approval from the Department in accordance with §63.10.a.5. This request may be made 1 year after the compliance date for the associated MACT standard.

H. NESHAP - CONDITIONS

Condition Number	Condition
H.1	All NESHAP notifications and reports shall be sent to the Manager of the Air Toxics Section, South Carolina Department of Health and Environmental Control - Bureau of Air Quality.

H. NESHAP - CONDITIONS

Condition Number	Condition
H.2	All NESHAP notifications and the cover letter to periodic reports shall be sent to the United States Environmental Protection Agency (US EPA) at the following address: **US EPA, Region 4** **Air, Pesticides and Toxics Management Division** **61 Forsyth Street** **Atlanta, GA 30303**
H.3	This facility has processes subject to the provisions of S.C. Regulation 61-62.63 and 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants, Subparts A and F, National Emission Standards For Organic Hazardous Air Pollutants From The Synthetic Organic Chemical Manufacturing Industry. Existing affected sources shall be in compliance with the requirements of these Subparts on the compliance date, unless otherwise noted. Any new affected sources shall comply with the requirements of these Subparts upon initial start-up unless otherwise noted.
H.4	This facility has processes subject to the provisions of S.C. Regulation 61-62.63 and 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants, Subparts A and G, National Emission Standards For Organic Hazardous Air Pollutants From The Synthetic Organic Chemical Manufacturing Industry For Process Vents, Storage Vessels, Transfer Operations, And Wastewater. Existing affected sources shall be in compliance with the requirements of these Subparts on the compliance date, unless otherwise noted. Any new affected sources shall comply with the requirements of these Subparts upon initial start-up unless otherwise noted.
H.5	This facility has processes subject to the provisions of S.C. Regulation 61-62.63 and 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants, Subparts A and H, National Emission Standards For Organic Hazardous Air Pollutants For Equipment Leaks. Existing affected sources shall be in compliance with the requirements of these Subparts on the compliance date, unless otherwise noted. Any new affected sources shall comply with the requirements of these Subparts upon initial start-up unless otherwise noted.
H.6	This facility has processes subject to the provisions of S.C. Regulation 61-62.63 and 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants, Subparts A and ZZZZ, National Emission Standards For Organic Hazardous Air Pollutants For Stationary Reciprocating Internal Combustion Engines (RICE). Existing affected sources shall be in compliance with the requirements of these Subparts on the compliance date, unless otherwise noted. Any new affected sources shall comply with the requirements of these Subparts upon initial start-up unless otherwise noted.

I. PERIODIC REPORTING SCHEDULE

Compliance Monitoring Report Submittal Frequency	Reporting Period (Begins on the startup date of the source.)	Report Due Date
Quarterly	January-March April-June July-September October-December	April 30 July 30 October 30 January 30
Semiannual	January-June April-September July-December October-March	July 30 October 30 January 30 April 30
Annual	January-December April-March July-June October-September	January 30 April 30 July 30 October 30
Note: This reporting schedule does not supersede any federal reporting requirements including but not limited to 40 CFR Part 60, 40 CFR Part 61, and 40 CFR Part 63. All federal reports must meet the reporting time frames specified in the federal standard unless the Department or EPA approves a change.		

J. REPORTING CONDITIONS

Condition Number	Condition
J.1	Reporting required in this permit, shall be submitted in a timely manner as directed in the Periodic Reporting Schedule of this permit.
J.2	All reports and notifications required under this permit shall be submitted to the person indicated in the specific condition at the following address: **2600 Bull Street** **Columbia, SC 29201** The contact information for the local EQC Regional office can be found at: **http://www.scdhec.gov**
J.3	The owner/operator shall submit written notification to the Director of Engineering Services of the date construction is commenced, postmarked no later than 30 days after such date.
J.4	Unless elsewhere specified within this permit, all reports required under this permit shall be submitted to the Manager of the Technical Management Section, Bureau of Air Quality.
J.5	(S.C. Regulation 61-62.1, Section II.J) For sources not required to have continuous emissions monitors, any malfunction of air pollution control equipment or system, process upset or other equipment failure which results in discharges of air contaminants lasting for one hour or more and which are greater than those discharges described for normal operation in the permit application shall be reported to the Department's local Environmental Quality Control Regional office within 24 hours after the beginning of the occurrence. The owner/operator shall also submit a written report within 30 days of the occurrence. This report shall be submitted to the Manager of the Technical Management Section, Bureau of Air Quality and shall include, at a minimum, the following: 1. The identity of the stack and/or emission point where the excess emissions occurred; 2. The magnitude of excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the excess emissions; 3. The time and duration of excess emissions; 4. The identity of the equipment causing the excess emissions; 5. The nature and cause of such excess emissions; 6. The steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunction; 7. The steps taken to limit the excess emissions; and, 8. Documentation that the air pollution control equipment, process equipment, or processes were at all times maintained and operated, to the maximum extent practicable, in a manner consistent with good practice for minimizing emissions.

K. PERMIT EXPIRATION AND EXTENSION

Condition Number	Condition
K.1	(S.C. Regulation 61-62.1, Section II.A.4) Approval to construct shall become invalid if construction: a. is not commenced within 18 months after receipt of such approval; b. is discontinued for a period of 18 months or more; or c. is not completed within a reasonable time as deemed by the Department. The Department may extend the construction permit for an additional 18-month period upon a satisfactory showing that an extension is justified. This request must be made prior to the permit expiration.
K.2.	This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within 18 months of the projected and approved commencement date.

L. PERMIT TO OPERATE

Condition Number	Condition
L.1	(S.C. Regulation 61-62.1 Section II.F.2) The owner/operator or professional engineer in charge of the project shall certify that, to the best of his/her knowledge and belief and as a result of periodic observation during construction, the construction under application has been completed in accordance with the specifications agreed upon in the construction permit issued by the Department.
L.2	If construction is certified as provided in S.C. Regulation 61-62.1 Section II.F.2, the owner or operator, may operate the source in compliance with the terms and conditions of the construction permit until the operating permit is issued by the Department.
L.3	If construction is not built as specified in the permit application and associated construction permit(s), the owner/operator must submit to the Department a complete description of modifications that are at variance with the documentation of the construction permitting determination prior to commencing operation. Construction variances that would trigger additional requirements that have not been addressed prior to start of operation shall be considered construction without a permit.
L.4	(S.C. Regulations 61-62.1 Section II.F.3 and 61-62.70.7) The owner or operator shall submit a written request to the Director of the Engineering Services for a new or revised operating permit to cover any new or altered source postmarked no later than 15 days after the actual date of initial startup unless a more stringent time frame is required by regulation. The request should be made using the appropriate Title V modification form.

M. RESERVED

N. GENERAL CONDITIONS

Condition Number	Condition
N.1	The permittee shall pay permit fees to the Department in accordance with the requirements of S.C. Regulation 61-30, Environmental Protection Fees.
N.2	In the event of an emergency, as defined in S.C. Regulation 61-62.1, Section II.L, the owner or operator shall demonstrate the affirmative defense of an emergency through properly signed, contemporaneous operating logs, and other relevant evidence that verify: 1. An emergency occurred, and the owner or operator can identify the cause(s) of the emergency; 2. The permitted source was at the time the emergency occurred being properly operated; 3. During the period of the emergency, the owner or operator took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and 4. The owner or operator gave a verbal notification of the emergency to the Department within 24 hours of the time when emission limitations were exceeded, followed by a written report within 30 days. The written report shall include, at a minimum, the information required by S.C. Regulation 61-62.1, Section II.J.1.c.i through viii. The written report shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. In any enforcement action, the owner or operator seeking to establish the occurrence of an emergency has the burden of proof. This provision is in addition to any emergency, or upset provision contained in any applicable requirement.

N. GENERAL CONDITIONS

Condition Number	Condition
N.3	(S.C. Regulation 61-62.1, Section II.O) Upon presentation of credentials and other documents as may be required by law, the owner or operator shall allow the Department or an authorized representative to perform the following: 1. Enter the facility where emissions-related activity is conducted, or where records must be kept under the conditions of the permit. 2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit. 3. Inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit. 4. As authorized by the Federal Clean Air Act and/or the S.C. Pollution Control Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

ATTACHMENT - MODELED EMISSION RATES

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The emission rates listed herein are not considered enforceable limitations but are used to evaluate ambient air quality impact. Until the Department makes a determination that a facility is causing or contributing to an exceedance of a state or federal ambient air quality standard, increases to these emission rates are not in themselves considered violations of these ambient air quality standards (see Modeling Requirements).

AMBIENT AIR QUALITY STANDARDS - STANDARD NO. 2					
Emission Point ID	**Modeled Emission Rates (lbs/hr)**				
	PM_{10}	**$PM_{2.5}$**	**SO_2**	**NO_X**	**CO**
#1ATMOS	--	--	--	--	3.03
#1HPVGTS	--	--	--	--	87.70
#1LPVGT [(1)]	--	--	--	--	--
#1OXGEN2	0.738	--	0.690	10.405	--
#2ATMOS	--	--	--	--	3.47
#2BULKLO	0.500	--	--	--	--
#2CRYSVE	0.540	--	--	--	20.00
#2DAYSIL	0.540	--	--	--	--
#2DRYEVE	0.260	--	--	--	--
#2FDDRUM	0.040	--	--	--	--
#2HPVGTS	0.111	--	0.008	1.468	1.238
#2NEWPTA	0.480	--	--	--	--
#2OXGEN3	0.754	--	0.429	25.770	--
#2PVS	--	--	--	--	75.00
#2SHIP	0.300	--	--	--	--
BOILER#3 – Low Load	2.540	--	47.62	8.492	--
BOILER#4 – Low Load	2.540	--	47.62	8.492	--
CVSCRUBR	1.21	--	--	--	24.00
DAYSILO1	0.42	--	--	--	--
DAYSILO2	0.42	--	--	--	--
DVSCRUBR	0.60	--	--	--	--
FEEDSLUR	0.10	--	--	--	--
ITEGEN	0.680	--	1.603	14.580	--
LCOMP1	1.800	--	3.000	3.500	--
LCOMP2	1.800	--	3.000	3.500	--
PTASTORA	1.68	--	--	--	--
RAWH2O	0.627	--	0.587	8.841	--
SCREENR3	0.10	--	--	--	--
SCREENR4	0.10	--	--	--	--
TASILOS	1.50	--	--	--	--
UTCOMP#1	0.91	--	0.85	12.80	--
UTCOMP#2	0.349	--	2.333	28.556	--
UTGEN#1	0.811	--	0.754	11.445	--

ATTACHMENT - MODELED EMISSION RATES

BP Amoco Chemical Company-Cooper River Plant
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CLASS II PREVENTION OF SIGNIFICANT DETERIORATION - STANDARD NO. 7				
Emission Point ID	**Modeled Emission Rates (lbs/hr)**			
	$PM_{2.5}$	**PM_{10}**	**SO_2**	**NO_X**
#2BULKLO	0.500	--	--	--
#2CRYSVE	0.540	--	--	--
#2DAYSIL	0.540	--	--	--
#2DRYEVE	0.260	--	--	--
#2FDDRUM	0.040	--	--	--
#2HPVGTS	0.111	--	0.008	1.468
#2NEWPTA	0.480	--	--	--
#2OXGEN3	0.754	--	0.429	1.471
#2SHIP	0.300	--	--	--
BOILER#1	-25.588	--	-555.533	-74.890
BOILER#2	-25.588	--	-555.533	-74.890
BOILER#3	2.540	--	47.620	8.492
BOILER#4	2.540	--	47.620	8.492
ITEGEN	0.680	--	1.603	0.833
LCOMP1	1.800	--	3.000	3.500
LCOMP2	1.800	--	3.000	3.500
SCREENR3	0.01	--	--	--
SCREENR4	0.01	--	--	--
UTCOMP#2	0.349	--	2.333	28.556